

Title (en)  
METHOD FOR CLEANING AND REPROCESSING EXHAUST GASES CONTAINING NITROGEN OXIDES AND CONTAINING AT LEAST ONE ADDITIONAL ACIDIC COMPOUND

Title (de)  
VERFAHREN ZUR REINIGUNG UND AUFARBEITUNG VON NITROSEN ABGASEN, DIE MINDESTENS NOCH EINE ZUSÄTZLICHE SAURE VERBINDUNG ENTHALTEN

Title (fr)  
PROCÉDÉ D'ÉPURATION ET DE TRAITEMENT DE GAZ D'ÉCHAPPEMENT NITREUX CONTENANT EN PLUS AU MOINS UN COMPOSÉ ACIDE SUPPLÉMENTAIRE

Publication  
**EP 2603306 A1 20130619 (DE)**

Application  
**EP 11796911 A 20110811**

Priority  
• DE 102010034467 A 20100813  
• DE 2011001578 W 20110811

Abstract (en)  
[origin: WO2012019597A1] The invention relates to a method for cleaning and reprocessing exhaust gases containing nitrogen oxides and containing at least one additional acidic compound, such as hydrofluoric acid, sulfur oxides, hydrochloric acid, or phosphoric acid, individually or in combination. In view of the disadvantages of the known prior art, a method should be provided, by means of which an exhaust gas of high purity and a mixed acid, which can be reused directly for pickling or etching, are obtained. For this purpose, the following method is proposed: incrementally, in at least three scrubbing stages, the exhaust gas is brought in contact, in counterflow, with water as a scrubbing solution having a temperature of 5 to 30°C while an oxidant is added, by means of scrubber columns K1, K2, K3 that are connected in series and that have a packed bed FS having a surface of 180 to 980 m<sup>2</sup>/m<sup>3</sup> and that have a loading rate per unit volume of 30 to 180 m<sup>3</sup>/m<sup>3</sup>h per scrubber column. In the first scrubbing stage K1, at least 60% of the NO<sub>x</sub> components contained in the exhaust gas and 90% of the further acidic components contained in the exhaust gas are scrubbed out. The scrubbing circuit is run until a concentration ratio of the mixed acid or dilute acid in the sequence K1:K2:K3 of 500:50:5 to 500:10:0.2 develops in the column bottoms KS of the scrubber columns K1, K2, K3. Immediately afterward, mixed acid is removed from the circuit from the first column K1 and then dilute acid is re-dosed successively from the second column K2 to the first column K1 and from the third column K3 to the second column K2 and water is supplied to the third column K3 as compensation. The loading rate per unit volume of the individual scrubber columns K1, K2, K3 among each other is set in such a way that the ratio of the loading rate per unit volume of the first scrubber column K1 to the loading rates per unit volume of the subsequent scrubber columns K2, K3 as a sum is 1:1.5 to 1:10.

IPC 8 full level  
**B01D 53/56** (2006.01); **B01D 53/75** (2006.01)

CPC (source: EP)  
**B01D 53/1406** (2013.01); **B01D 53/1456** (2013.01); **B01D 53/56** (2013.01); **B01D 53/75** (2013.01); **F16K 24/00** (2013.01); **F24D 19/083** (2013.01); **B01D 2251/106** (2013.01); **B01D 2252/103** (2013.01); **B01D 2257/2045** (2013.01); **B01D 2257/2047** (2013.01); **B01D 2257/302** (2013.01); **B01D 2257/404** (2013.01); **B01D 2257/55** (2013.01); **B01D 2258/0216** (2013.01); **B01D 2258/025** (2013.01); **Y02C 20/30** (2013.01)

Citation (search report)  
See references of WO 2012019597A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)  
**DE 102010034467 A1 20120216**; **DE 102010034467 B4 20121206**; EP 2603306 A1 20130619; EP 2603306 B1 20140625; WO 2012019597 A1 20120216

DOCDB simple family (application)  
**DE 102010034467 A 20100813**; DE 2011001578 W 20110811; EP 11796911 A 20110811